

Thermal Structure of Supra-Arcade Plasma in Two Solar Flares

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In this work, we use Hinode/XRT and SDO/AIA data to determine the thermal structure of supra-arcade plasma in two solar flares. The first flare is a M1.2 flare that occurred on November 5, 2010 on the east limb. This flare was one of a series of flares from AR 11121, published in Reeves & Golub (2011). The second flare is an X1.7 flare that occurred on January 27, 2012 on the west limb. This flare exhibits visible supra-arcade downflows (SADs), where the November 2010 flare does not. For these two flares we combine XRT and AIA data to calculate DEMs of each pixel in the supra-arcade plasma, giving insight into the temperature and density structures in the fan of plasma above the post-flare arcade. We find in each case that the supra-arcade plasma is around 10 MK, and there is a marked decrease in the emission measure in the SADs. We also compare the DEMs calculated with the combined AIA/XRT dataset to those calculated using AIA alone.